



Jan/Feb 2019

42nd Edition

Lionel's News

Dear Business Partner

Hereby we bring you our first newsletter for 2019. In this edition we start by looking at what mastitis is, the traditional viewpoint of mastitis vs. the reality, the economic importance of this disease as well as the natural defences that a cow udder has against germs. Our 2nd article gives us more insight on antimicrobial resistance in pig production. In our last article of this issue we introduce you to GreenZyme, a company focused on environmentally responsible products and solutions for cleaning, water treatment, feminine hygiene and marine applications.

As always, we also bring you advertisements on trusted products and if you need any more information on these and other products you are welcome to contact the sales representative in your area.

Thank you for your continuous loyalty and support. We hope to keep improving on our service delivery throughout the year of 2019. Feel free to contact us if you have any specific topics you would like us to cover in future editions. Your inputs are always welcome.

Many thanks to all our loyal customers. Going forward, we hope to bring you more exciting products/services and the best possible customer experience available.

Visit our website: WWW.LIONELSVET.CO.ZA

e-mail: info@lionelsvet.co.za Tel: (021) 932 2019

MASTITIS – DEEL 1

Definisie:

Mastitis is inflammasie van die uierweefsel

<u>Kliniese mastitis kom voor in 3 vorms naamlik:</u>	<u>Simptome in uier</u>	<u>Sistemiese tekens</u>
<u>Perakuut</u>	<i>pyn, swelling, hitte, ongemak en verlies van funksie</i>	<i>koors, depressie, bewing, aptytsverlies en verlies van gewig. Somtyds ook vrekte a.g.v. toksemie</i>
<u>Akuut</u>	<i>pyn, swelling, hitte, ongemak en verlies van funksie</i>	<i>koors en matige depressie.</i>
<u>Subakuut</u>	<i>pyn, swelling, hitte, ongemak en verlies van funksie</i>	<i>geen sistemiese tekens</i>

Twee tipes Mastitis

- **Subkliniese mastitis** is die teenwoordigheid van inflammasie in die afwesigheid van erge tekens. Dit word net opgetel deur melk te toets vir produkte van inflammasie soos:
 - *witbloedselle, SST, fibrinoblaste en serum.*
 - pH van die melk is ook *meer alkalies* a.g.v. oordra van -NaCl en bikarbonate van bloed na melk.
 - Ook opgetel deur **isolasië** van **patogene** uit melk.
- **Chroniese mastitis** is 'n proses wat vir maande lank duur of van een laktasie na 'n volgende. Dit bestaan vir die grootste deel in die subkliniese vorm wat periodiek opvlam om kliniese of subkliniese tekens te gee wat dan gewoonlik weer verdwyn om weer terug te gaan na die subkliniese vorm.

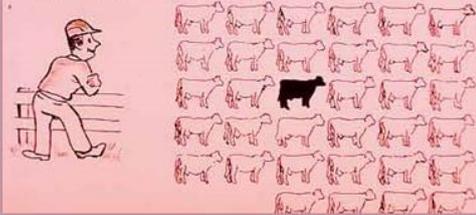
Tradisionele denkwys

Patroon soos baie tradisionele boere dit gesien het



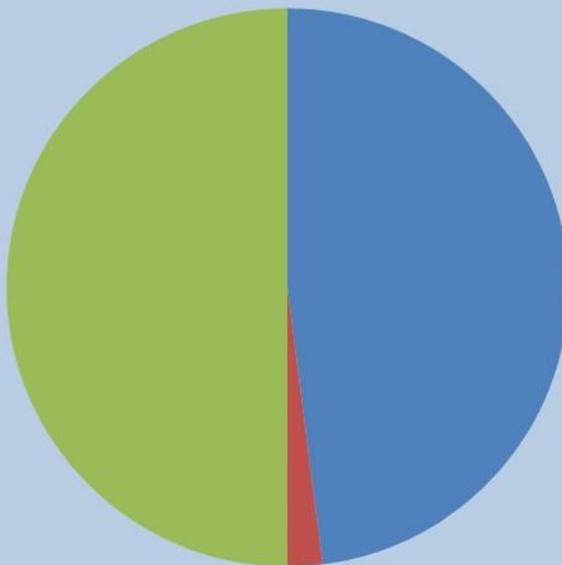
- Koeie met skynbaar normale uier
- Koeie met kliniese mastitis

WHEN the average dairy farmer counts the **CLINICAL** mastitis cases he knows about in his herd --- **THIS** is what he sees...

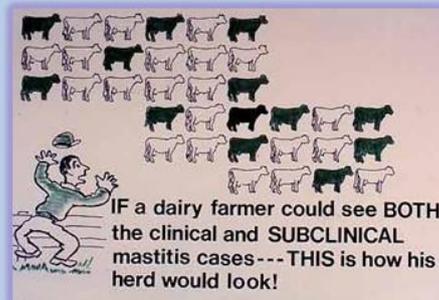


Realiteit t.o.v. voorkoms van Mastitis

Patroon soos wat dit werklik is



- Nie-besmette uiers
- Klinies besmette uiers
- Subklinies besmette uiers



Ekonomiese belang van Mastitis

Minder as 50% van alle mastitis gevalle word suksesvol behandel.

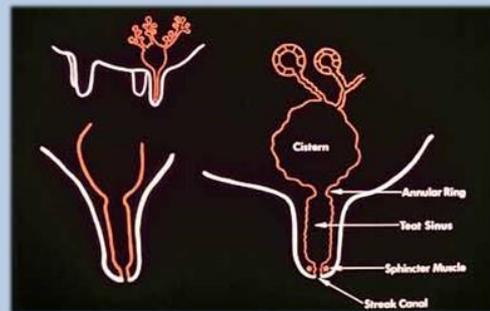
- 1.) Laer gehalte melk
- 2.)Verlaging in melkproduksie
- 3.)Permanente skade aan uier wat dan nie in staat is om melk ekonomies te produseer nie
- 4.)Uitskot van koeie ($\pm 4\%$ /jaar)

Samestelling van normale melk vs. mastitis melk

	Normale melk	Mastitis melk
Volume	normaal	-10%
Bottervet	3,6%	1%
Chloriede	0,1%	0,5% (souterig)
Laktose	4,7%	1%
Proteïene	4,8%	3-4%
SST/ml.	tot 400 000 (eintlik <200 000)	1-2 000 000
Bakterieë	geen	baie
Melksuur	<0,18%	<0,18%

Natuurlike skanse teen kiem indringing

- Die skanse raak al hoe minder doeltreffend soos wat koeie ouer word
- **Speenkanaal:**
 - 1.) uitgevoer met **plat gelaagde epiteel** wat 'n meganiese skans bied teen kieme
 - 2.) het **mukosa voue** wat inmekaar pas wat sodoende ook 'n skans vorm
 - 3.) het 'n gedurige proses van **keratinisasie** wat 'n **sebumagtige stof produseer** wat 'n hoë inhoud langkettingvetsure het, wat bakteriostaties is
 - 4.) aan binnekant is **Furstenburg se roset** wat ook voue wat inmekaar skuif het
 - 5.) is omring deur 'n **sfinkter spier**



Increase your benefits by protecting your livestock

Post-dip comparison



Kenostart™
The premium iodine teat conditioning dip.
Based on an active iodine complex. Registered as veterinary medicine in 13 E.U. countries for mastitis prevention. Economic in use.



Kenocidin®
For smooth and silky soft teats!
Improves the skin condition considerably. Based on chlorhexidine and mint.



Kenolac™
The first patented fly-repellent teat dip!
Offers protection against flies and sunburn. Based on lactic acid. Ideal for organic production.

Bacteriacidal actions

Teat conditioning

Teat skin evaluation scores:

Score 1	Score 2	Score 3	Score 4
Teat skin is smooth, free from scales, cracks or chapping.	Teat skin shows some evidence of scaling.	Teat skin is chapped. Some small warts may be present.	Teat skin is chapped and cracked. Redness, indicating inflammation is present. Numerous warts may be present.
			

Teat end evaluation scores:

Score 1	Score 2	Score 3	Score 4
Teat end sphincter is smooth, with no evidence of irritation.	Teat end has a raised ring.	Teat end sphincter is roughened with slight cracks, but no redness is present.	Teat end sphincter is inverted with many cracks, giving a "flowered" appearance. Teat end may have old but healing scabs.
			



Kenomix™
Kenomix + activator is a chlorine dioxide 2-components teat dip.



Kenostart SD™
Iodine spray
Based on an active iodine complex. Registered as veterinary medicine in 13 E.U. countries for mastitis prevention. Economic in use.

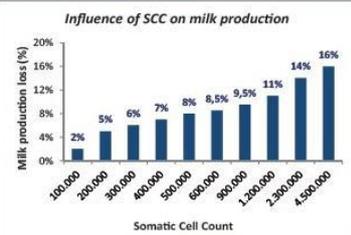


Kenocidin® SD
Chlorhexidine and mint spray
Improves the skin condition considerably. Based on chlorhexidine and mint.

Bacteriacidal actions

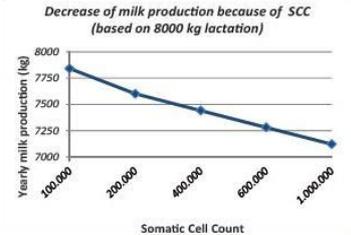
Teat conditioning

Influence of SCC on milk production



Somatic Cell Count	Milk production lost (%)
100,000	2%
200,000	5%
300,000	6%
400,000	7%
500,000	8%
600,000	8.5%
900,000	9.5%
1,200,000	11%
2,300,000	14%
4,500,000	16%

Decrease of milk production because of SCC (based on 8000 kg lactation)



Somatic Cell Count	Yearly milk production (kg)
100,000	8000
200,000	7700
400,000	7400
600,000	7200
1,000,000	7100

CID LINES
Believe in hygiene!

LIONEL'S
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Solving your animal health problems
More than just products

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Northern region: 082 784 5275 (Herman Bezuidenhout)

Southern Region: 082 923 6382 (Jannic Zietsman)

Natal: 083 788 1219 (Steve Elliott)

AMR in pig production – colistin under the spotlight

by 5m Editor

17 December 2018, at 12:00am

Antimicrobial resistance does not respect geographical, political or species boundaries so how is the pig industry responding to reduce its impacts on human and animal health?

AMR is not a new topic to anyone involved in livestock and food production, and there is a wealth of information raising awareness and imparting knowledge about how to tackle the issue, plus many examples of Government interventions, NGO and industry-led initiatives.

The aim of this article, however is to highlight the significance of the extraordinary mobility and potency of horizontally transmissible genetic elements of antimicrobial resistance (also called antimicrobial resistant genes, or ARGs), and the necessity for co-ordinated and rapid global responses to new and emerging threats. ARGs do not respect geographical, political or bacterial species boundaries. They spread very widely and rapidly, and they can be found in all bacteria, not just the pathogenic ones. This reservoir of transmissible resistance is known as the 'resistome'.

"Overuse and misuse of antibiotics in both humans and animals has dramatically increased the size and diversity of the resistome, underpinning the dire position we find ourselves in now."

von Wintersdorff *et al.* 2016

The emergence of horizontally transmissible colistin resistance in China in 2015 ([Liu et al. 2016](#)), and its rapid global spread, is one such example – and one that is particularly pertinent to the pig industry.

The tale of colistin

Colistin is an antibiotic in the family of polymyxins.

- It was not commonly prescribed in humans due to its potential for renal toxicity.
- However, with the increase in global AMR, colistin is now considered the last line of defence for several multi-drug resistant Gram-negative infections in humans – its value in the treatment of life-threatening infections needs to be preserved for as long as possible ([Rhouma et al. 2017](#)).

Historically colistin has also been a mainstay antibiotic used in pig production systems across the world – often in the prevention of post-weaning diarrhoea, PWD ([Kempf et al. 2013](#)).

This usage did not come under particular scrutiny in the early days of the AMR debate, because any resistance to colistin, observed up to that point in time, was non-transferrable genome mediated, meaning it was not considered likely to amplify and/or disseminate rapidly ([Rhouma et al. 2017](#)).

However, with the discovery of the *mcr-1* plasmid mediated gene, in *Escherichia coli* isolated from people, pigs and retail meat in China in 2015 (Liu *et al.* 2016), this all changed. Suddenly there were ARGs to colistin with the ability to transfer horizontally between different bacterial species, sounding warning bells in the scientific community across the globe (Hu *et al.* 2016, Tse & Yuen 2016).

What was the global response?

- WHO added colistin to their list of highest priority critically important antimicrobials, HP-CIAs, along with the now well-known list of fluoroquinolones, 3rd and 4th generation cephalosporins, macrolides, and glycopeptides (WHO 2017) (Figure 1).

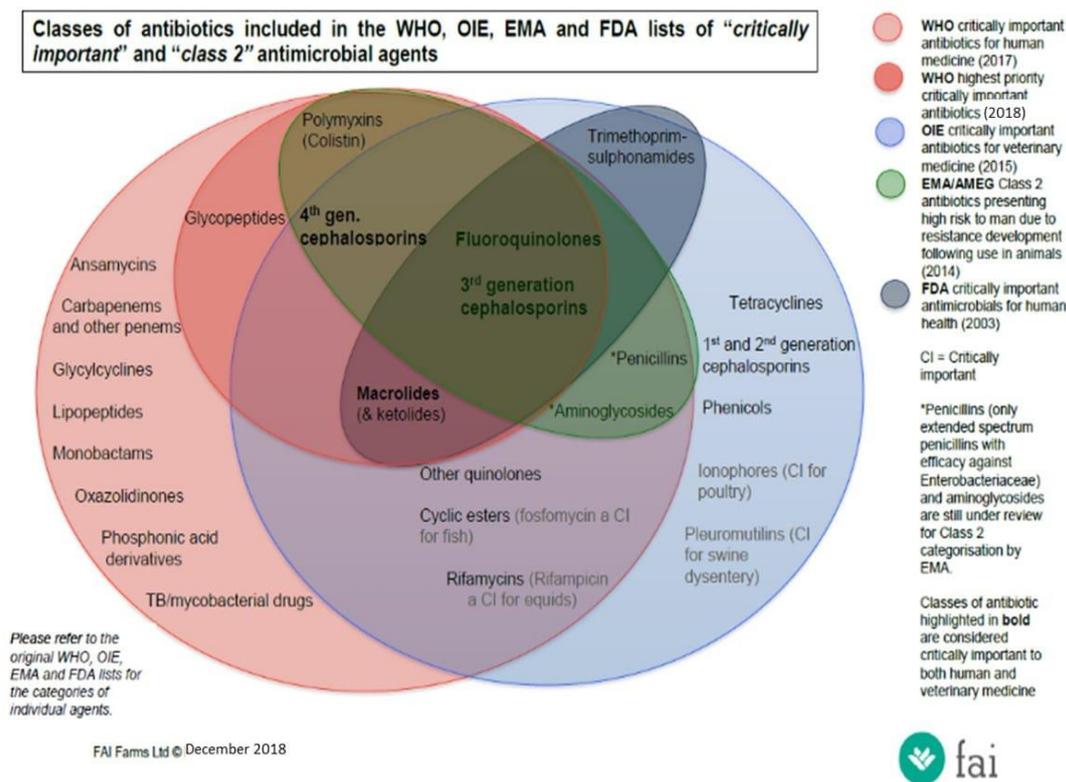


Figure 1. Classes of antibiotics in the WHO, OIE, EMA and FDA lists of 'critically important' and 'class 2' antimicrobial agents

- The Chinese Government banned the use of colistin in feed for livestock (Walsh & Wu 2016).

- The European Medicines Agency, EMA, added colistin to their Category 2 class of antibiotics, which includes medicines reserved for treating infections in animals for which no effective alternative treatments exist (EMA 2016).

- EMA also advised all Member States to reduce colistin use to a target of 5mg/PCU (population correction unit).

- EMA cautioned that reductions in colistin use should be achieved through improved animal health, and not by the use of other antimicrobials to compensate.

How did the pig industry react?

The biggest global producers of pork are China, EU, and the United States (Figure 2). Within the EU, the biggest producers are Spain and Germany (Figure 3).

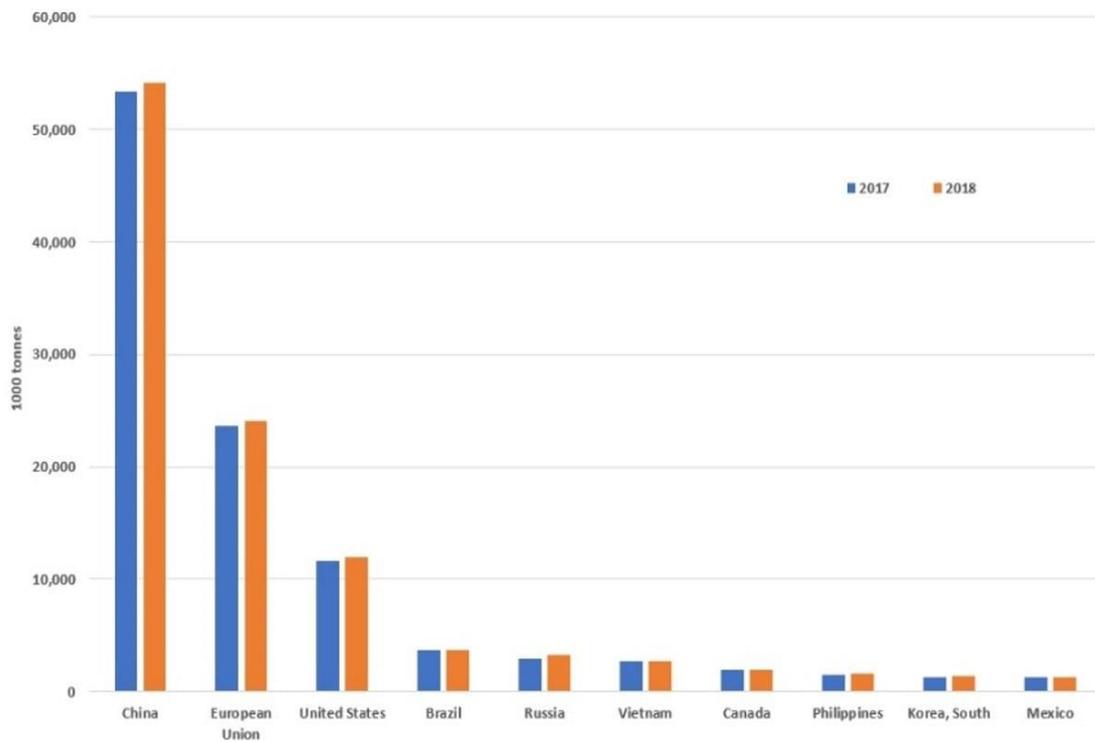


Figure 2. Top ten global producers of pork for 2017 and 2018. Data sourced from USDA FSA 2018

Pigmeat: slaughterings in the EU Member States, 2016

(% of EU total, based on number of animals)

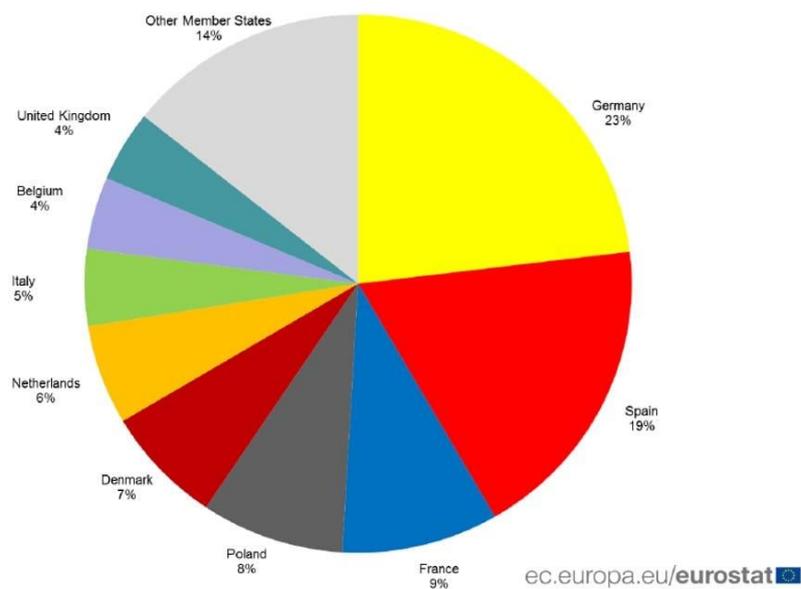


Figure 3. EU producers of pork in 2016. Source: ec.europa.eu/eurostat

- China banned the use of colistin in animal feed.
- In the US, colistin is not marketed for livestock use, although the *mcr-1* gene has been isolated from pigs in the US ([Meinersmann et al. 2017](#)).
- In EU countries, colistin was still being widely used in pig production systems prior to its addition to the list of HP-CIAs in 2016, despite reductions in total antimicrobial usage (Figure 4) (from [EMA 2018](#)).

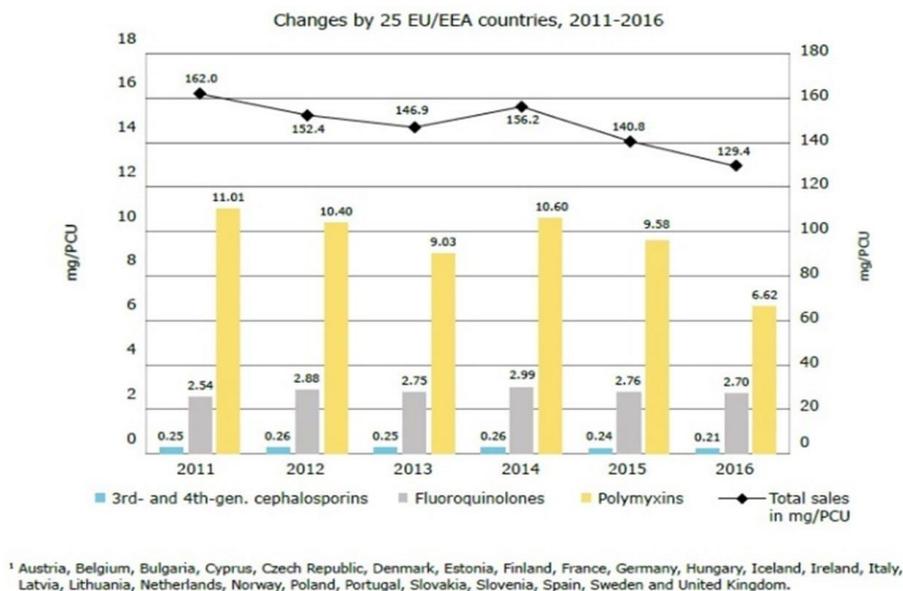


Figure 4. Changes in aggregated overall sales of fluoroquinolones, 3rd and 4th generation cephalosporins and polymyxins, for 25 EU/EEA countries, from 2011 to 2016 (note differences in the scales of the Y axes). Source: EMA 2018

Colistin reductions are however, now being reported. For example, recent data from Denmark, Spain and the UK demonstrate encouraging trends (Figures 5a,b,c) (from [Danmap 2017](#), [Sacristán Álvarez 2018](#), [UK-VARSS 2018](#)).

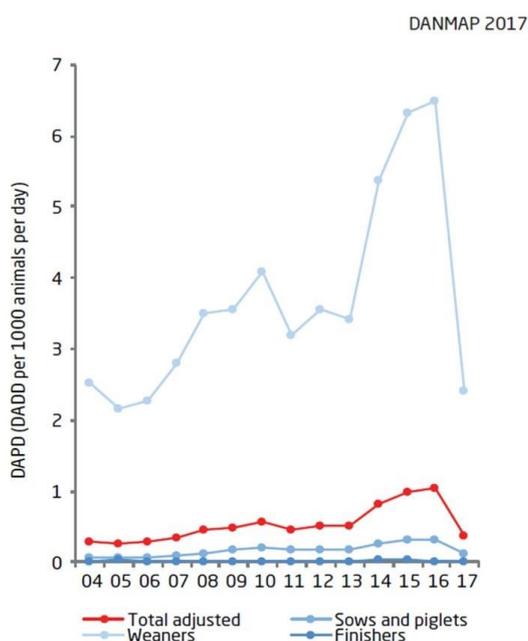


Figure 5a. Total use of colistin in production animals, Denmark. Source: Danmap 2017

55 companies adhere to the Agreement

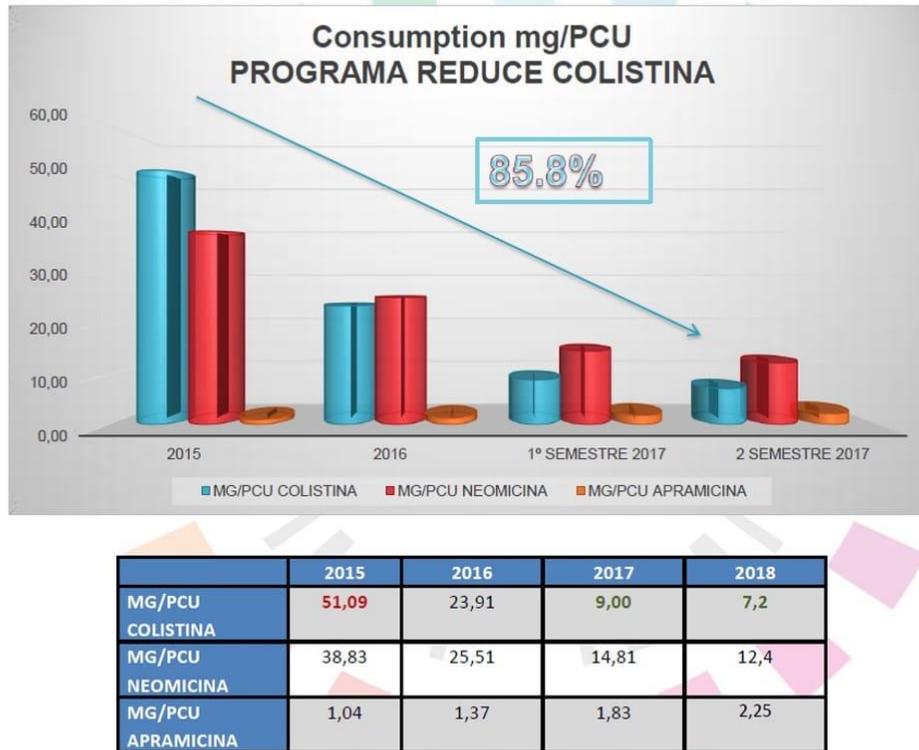


Figure 5b. Data from Spain showing reductions in colistin use in livestock. Source: Sacristán Álvarez 2018

HP-CIA usage recorded for active ingredient (mg/kg) of antibiotics in eMB Pigs: colistin (■), 3rd and 4th generation cephalosporins (■) and fluoroquinolones (■), 2015–2017

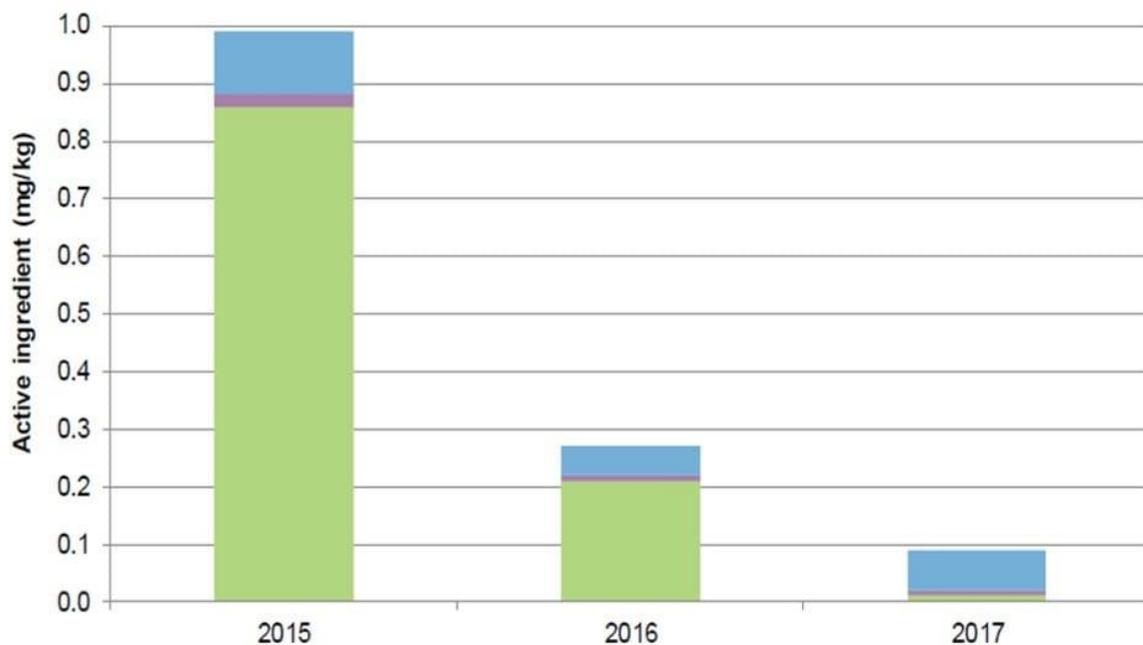


Figure 5c. Data from the UK showing reductions in colistin usage in pigs. Source: UK-VARSS 2018

What does the future look like?

A word of caution here.

Data from Denmark (Danmap 2017) (Figure 6) indicate that as the use of colistin has declined, so the use of other antibiotics (penicillins, macrolides and aminoglycosides) has increased, suggesting that this may be compensatory use, and that tackling PWD is proving challenging.

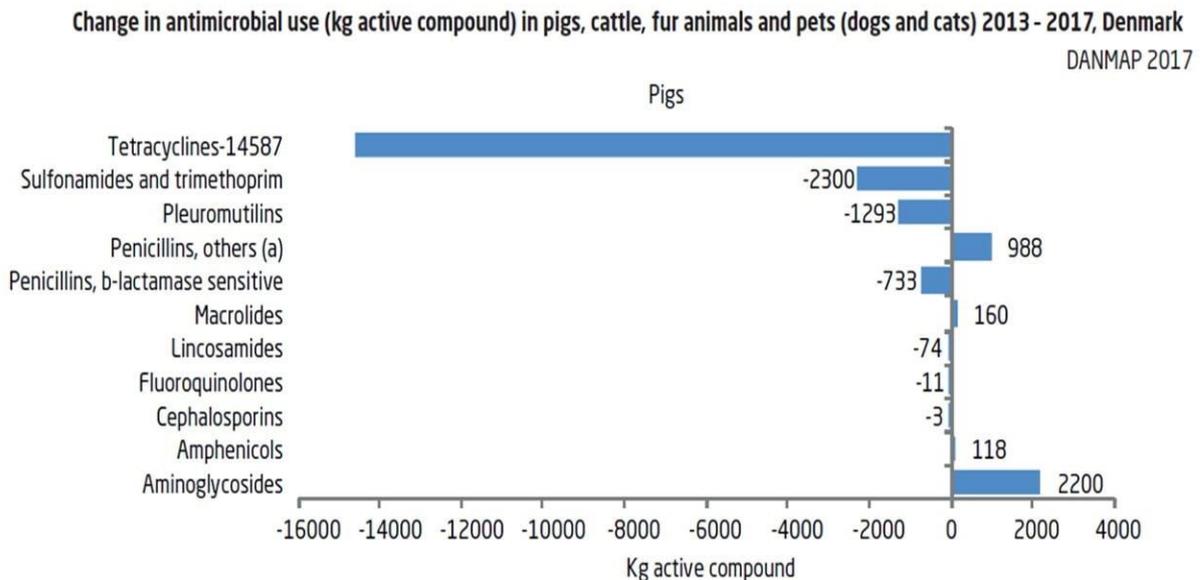


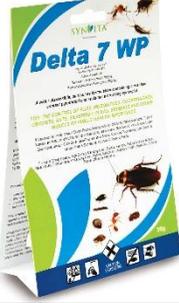
Figure 6. Change in antimicrobial use (kg active compound) in pigs, cattle, fur animals and pets (dogs and cats) 2013-2017, Denmark. Source: Danmap 2017

Tackling AMR is not about focussing on zero-usage. It is about focussing on improving and maximising animal health and welfare, to minimise the necessity for antimicrobial use. Routine preventive use is a particular issue that needs to be addressed, and success may require systematic change and human behavioural change.

Progress from the pig industry in many countries to date has been impressive, but the complex causality of PWD, together with problematic endemic pig diseases (such as PRRSV and *Mycoplasma hyopneumoniae*), and unpredictable future bacterial attempts to outwit us humans, will pose ongoing challenges for the industry.

By **Alex Tomlinson**, MA Vet MB MSc PhD Dip ECZM MRCVS

<https://thepigsite.com/articles/amr-in-pig-production-colistin-under-the-spotlight>

Produkt	Tipe	Beskrywing	Aktiewe Bestanddeel	Areas vir Gebruik	LVS kode en Volume
<p>Delta 7</p> 	Benatbare poeier	Volwasse vlieg beheer RESIDUAL SURFACE SPRAY	Deltamethrin Piperonyl Butoxide (Synergis)	Binne en buite mure van varkhok Teen pale, drade en plafon	LVS 99870 – 35g Meng 35g met 5lt water
<p>Nimbus</p> 	“RTU Space Spray”	Volwasse vlieg beheer “Space spray”	Pyrethrum Piperonyl Butoxide (Synergis)	Gebruik spuitkan met fyn “nozzle” spuit orlas binne varkhokke	LVS 99984 – 20lt “Ready to use spray”
<p>Snap</p> 	Granulêre lokaas	Volwasse vlieg beheer	Methomyl Z-9 Tricosene (Fermoon lokmiddel)	Strooi korrel op vloer, in hoeke en vensterbanke Meng korrels met water/eier/melk en verf binne vensterbanke of teen mure	LVS 02499 – 500g LVS 00632 – 20kg “Ready to use bait”
<p>Dimilin</p> 	Benatbare poeier – Dimilin 25 WP Korrels – Dimilin GR-2 Vloeistof – Dimilin SC-48	Larf beheer Insek groei reguleerder	Diflubensuron Chitien inhibeerder	Gebruik by misgate Enige nat areas waar mis versamel en vlieë eiers waargeneem word	LVS 00007 – 1kg LVS 02463 – 1kg LVS 00536 – 1lt

Produk	Aktiewe Bestanddeel	Areas vir gebruik	LVS kode en Verpakking		
<p>Fly- Tac</p> 	<p>Geen Gif</p>	<p>Span Fly-Tac binne die varkhokke</p>	<p>LVS 97641 – 200m LVS 98468 – 400m</p>		
<p>Wefcomatic metered aerosol</p> 	<p>Pyrethrum Piperonyl Butoxide (Synergis)</p>	<p>Kan gebruik word in sensitiewe areas bv. Kombuise, kantore ens.</p>	<p>LVS 06101 – 280ml</p>		
<p>Red Top vlieëvanger</p> 		<p>Vlieëvangers kan rondom vark geboue gehang word</p>	<p>LVS 01695</p>		

History

GreenZyme started in 2014 as a supplier of green cleaning products to the cleaning industry. Driven by concern for the ever-increasing threat that our planet was reaching a point of no return, we decided to only provide environmentally responsible products and solutions for cleaning, waste water treatment, feminine hygiene, and marine applications. The aim was to make a positive impact on industry and the environment.

In 2017, the decision was taken to break away from our local suppliers of “green cleaning” products and manufacture our own range of products. We aligned ourselves with internationally renowned bioscience laboratories in the UK and the US. With their ongoing assistance and support, we are able to develop and manufacture products that offer the latest technology combining environmentally friendly, modern chemistry and specialised bacillus cultures.

In 2018 our products conformed to the standards set by the Eco-benign® Foundation and are proud to be permitted to display their endorsement on our labels. 2018 also saw our products receive international recognition. By the end of 2018 we were exporting to 8 countries, with enquiries and opportunities being received from several more.

What we do

GreenZyme is a manufacturer, marketer and distributor of environmentally responsible products and solutions for cleaning, waste water treatment, feminine hygiene, and marine applications. Our products are formulated with superior chemical technologies combined with specialised bacillus cultures to have a gentle or harmless effect on our environment when introduction is made through application or disposal. Our products are distributed throughout South Africa and to an ever-growing international market.

We achieve this by:

- Providing solutions and alternatives for the challenges in the facilities, marine cleaning and waste water treatment industries
- Innovative and progressive national and international procurement
- Ongoing research and development of products and opportunities
- Providing training and support to our clients
- Marketing is supported by qualified technical sales personnel
- Providing local and international technical backup to our clients
- Keeping up to date with the latest international trends and research
- Willingness to adjustment our products to include the latest research
- Creating, developing and supplying the most environmentally responsible microbial and antimicrobial products available globally.

Unique Skills:

We specialise in the blending of environmentally friendly cleaning and waste water treatment products. All our products move with the latest trend of using modern chemistry and eco-benign® probiotic microbes as an alternative solution to harsh chemical products currently available in the market. We are able to develop and produce application specific products for our clients.

Future development:

- To locally manufacture solid waste water treatment and odour control products

Our product range:

- Eco-benign® microbial cleaning products for General Purpose cleaning, exterior and interior hard surface cleaning, Soft furnishing cleaning (carpet and upholstery shampoo, spotters and stain removers)
- Odour control products
- Non-Acid de-scaler (acid replacement products)
- Drain line and fat trap microbial treatments (FOG)
- Bioaugmentation powders, liquids and solids for the treatment of sewerage, industrial and food production waste water
- Bioremediation products for the degradation of hydrocarbon pollution
- Feminine hygiene antimicrobial treatment products.

For Further Distributer information: Contact info@lionelsvet.co.za or Warnich Biersteker 082 414 7293

What is eco-benign®?

Our products are formulated with superior chemical technologies combined with specialised Bacillus cultures to have a gentle or

harmless effect on the environment when an introduction is made through application or disposal.

www.greenzyme.co.za

Info@greenzyme.co.za

+27(0) 82 579 0066





GreenZyme Professional
Digester FOG Block



A unique bacterial laden solid, combining high bacterial count with slow release technology, for use in degrading organic waste in grease traps.

Features and benefits

Optimised application-specific, proprietary bacterial consortium:

Degrades a broader spectrum of substrates

Proven complete degradation of effluent and waste water, FOG all the way to carbon dioxide and water:

Effective bacterial action reduces odours associated with sewers, lift stations wet wells, grease traps, interceptors and drain lines within hours of application.

Degrades high concentration of waste and enhances BOD/COD/TSS removal.

Reduces sludge build-up helping to eliminate malodours such as hydrogen sulphide.

Contains no harsh chemicals

Easy to install

No special equipment or labour required, so highly cost effective.

Not dependant on people or equipment for dosing.

Performance benefits over manually dosed systems.

Continuous operation 24 hours per day, increases system efficiency.

Readily biodegradable, low toxicity formula:

Every component chosen to minimise environmental impact.

Modern bacteria-compatible chemistry:

Works with the bacteria not against it to deliver maximum product performance.

Bacillus bacteria 100% in spore form:

Provides long product shelf life. All strains are ECC Class 1

Application areas

- Grease traps
- Grease interceptors
- Waste water treatment plants

Overview

Digester FOG Block is a slow dissolve, bacterial-laden solid for use in degrading organic waste in grease traps and grease interceptors. The safe, application-specific bacteria are present in high numbers to handle difficult organic problems.

The unique block will dissolve gradually which allows for continuous treatment and degradation of waste. The naturally-occurring bacteria contained in the block will reduce odour, sludge, fats, oils and grease build-up.

Targeted compounds

Fats, oils and grease and cellulose

Bacteria count

5.00E9 cfu/g *Bacillus* spores

Bacterial type

Bacillus spores

Formula properties

Red solid with mild surfactant odour

Effective pH range

4.0 - 11.0

Temperature range

5 - 50 degrees Celsius

Packaging

0.5kg block – 12 blocks per case

1kg block – 4 blocks per case

5kg blocks – 4 blocks per case

(shelf life of 24 months in an original unopened container)

What is green cleaning technology?

Our products are formulated with superior chemical technologies combined with specialised *Bacillus* cultures to have a gentle or harmless effect on the environment when an introduction is made through application or disposal.

For more information contact Steve Muller 082 579 0066 or

steve@greenzyme.co.za



GreenZyme Professional Digester Ultra

➔ A specially selected blend of non-toxic, natural microbes which are designed to ensure that drains are maintained free running and without odours

Overview

When dispensed regularly into the drainage system, the microbes in Digester Ultra digest kitchen or food derived oils, fats and greases and other organic matter which cause offensive odours.

The primary application is in food preparation establishments where regular quantities of solid food wastes find their way into the waste water drainage system. These deposits can block grease traps and line waste pipes, leading to unpleasant odours and unhygienic conditions which invariably need chemical or mechanical treatment.

This product is demonstrably more effective than conventional biological based drain cleaners as it is designed to form a bio-film to produce a continuous and renewable supply of highly active bacteria for fat and grease degradation. This bio-film adheres to the system and is highly resistant to cleaning fluids and disinfectants.

In very high load situations, Digester Ultra will not totally eliminate grease. However, in such circumstances, provided it is installed correctly, it has been found that Digester Ultra treatment significantly reduces the number of call outs or mechanical treatments required.

Digester Ultra will provide a longer lasting protection than enzyme based or caustic chemical products, which have insufficient contact time with waste in the system to be effective.

Application areas

- Industrial Grease Traps
- Drain lines and grease traps in food preparation

Targeted compounds: Wide range of organic compounds including proteins, starches, cellulose and fats oils and greases from food sources.

Bacterial type: *Bacillus* spore blend

Formula properties: tan coloured liquid with natural odour.

Performance properties:

Features and benefits

- Optimised proprietary bacteria consortium to compost a broad range of substrates.
- Dosing equipment is unobtrusive and will not “clutter” the kitchen area.
- Rapid and highly effective elimination of bad odours.
- Reduces blockages in a cost effective way.
- Robust dispenser system.
- Proven technology behind the product.
- Environmentally sensitive, eliminates the use of hazardous chemicals, creating an improved working environment.
- Will not adversely effect drainage pipes, walls or bondings.
- Can help to reduce effluent strength from a premises and consequently can reduce waste disposal costs.
- Delivers the same bacterial dose as conventional liquids, bacteria is effectively dispersed throughout system by normal water flow.
- Readily biodegradable, low toxicity eco-benign® components to minimise environmental impact.
- Long shelf life.
- Manufactured in accordance with recognised international standards, ISO 9001 and ISO 14001

GreenZyme Digester Ultra is available as a ready to use product packaged in 360ml cartridges.

What is eco-benign®?

Our products are formulated with superior chemical technologies combined with specialised *Bacillus* cultures to have a gentle or harmless effect on the environment when an introduction is made through application or disposal.





GreenZyme Professional Digester STP



A versatile mid-range specification multi-strain bacterial formulation for a wide range of medium demand applications in effluent treatment, sewage spills, septic tanks, pit toilets, grease degradation, odour control, etc.

Overview

GreenZyme Digester STP is a multi-strain blend of micro-organisms and propriety ingredients, designed as a cost effective, ready to use product for a wide range of applications and waste water treatment situations, such as effluent treatment in septic tanks, sewage spills, grease degradation, odour control, composting, municipal water.

The bacterial strains selected produce a wide range of extra-cellular hydrolytic enzymes that aid in the biodegradation of other substrates that might be encountered in septic systems such as fat, starch, protein and cellulose.

Digester STP is formulated with enzymes and other ingredients to offer a bio-enzymatic product for moderate challenge applications or where regular dosing is not easy to achieve.

Due to the biological nature of the product extremes of temperature and pH should be avoided. Also, care should be taken ensure harsh chemicals, biocides, sanitisers or bleaches are not added to the toilet

Features and benefits

Optimised application-specific, proprietary bacterial and enzyme consortium: Specifically targets and degrades all types of effluent, sewage, FOG, including solid fats and all types of edible oils.

Proven complete degradation of effluent all the way to carbon dioxide and water: Effective bacterial action reduces odours associated with septic systems and pit toilets within hours of application.

With regular dosing, keeps drain lines clear and free flowing: Prevents negative impact on physical function of septic systems and pit toilets Helps to optimise their performance.

Will also tackle grease build -up in effluent collection systems such as wet wells and at the sewage treatment plant.

Readily biodegradable, low toxicity formula: Every component chosen to minimise environmental impact.

Modern bacteria-compatible chemistry: Works with the bacteria not against it to deliver maximum product performance.

Can tackle mixtures of sewage, grease, oils and detergents and other food waste.

Bacillus 100% in spore form: Provides long product shelf life.

Application areas

- Portable toilets and septic tank treatment
- Pit toilets and cess pits.
- Bioaugmentation in effluent treatment including municipal, food processing, pulp and paper plants
- Treatment for municipal drains, sewers and lift stations.
- Sludge reduction
- Composting and agricultural slurry treatment

Targeted compounds: sewage, effluent

Bacterial type: *Bacillus* spore blend

Formula properties: tan, grainy

Available in 100g sachets, 1k bags, 5kg buckets and 25kg bags or

What is eco-benign®?

Our products are formulated with superior chemical technologies combined with specialised *Bacillus* cultures to have a gentle or harmless effect on the environment when an introduction is made through application or disposal.



Welcome to the Lionel's Team!



We would like to welcome **Elmarie Erasmus** at our **JHB Lionel's Vet Branch** in **Krugersdorp** as **Branch Manager**.

Phone: (010) 591 2030
Email: elmarie@lionelsvet.co.za



We would like to welcome **JP de Lange** to the **Nutriblend** team. He will be the new **Production Manager** at the Nutriblend branch in **Mooreesburg**.

Phone: (022) 022 0023
Email: production@nutriblend.co.za



We would like to welcome **Amy Gossman** as the new **group HR officer**. She is based at **Cape Town** Branch.

Phone: (021) 932 2019
Email: HR@lionelsvet.co.za



We would like to Welcome **Lolita Horn** in the group, she is working for **Goodhope Cheese** in the **Accounts Department**.

Phone: (021) 932 2019
Email: accounts@goodhopecheese.co.za



We would like to Welcome **Ryan Newman** in the group, He is working as a **Salesman** for **Goodhope Cheese**.

Phone: 060 772 6952
Email: ryan@goodhopecheese.co.za

Sales Team

Name	Cell Number	E-mail Address	Area
Andreas du Toit	082 641 8944	andreasdtl@gmail.com	Karoo
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Byron Ott	072 668 0860	byron.ott@lionelsvet.co.za	Western Cape / Swatland
CC Terblanche	076 896 8748	cc.terblanche@lionelsvet.co.za	Southern Cape
Debbie Elliott	082 376 3702	dmelliott@netactive.co.za	Midlands
Derick Coetzee	082 373 6068	djcoetzee@telkomsa.net	Southern Cape
Gavin Dargie	072 246 7750	gavdargie1@gmail.com	East-London
GJ du Preez	082 042 3303	dupreez.gj@gmail.com	Eastern Cape
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Jamie Renton	083 659 8442	jame@lionelsvet.co.za	Eastern Cape – Just Milk group
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Johan Botes	073 925 2382	johan@lionelsvet.co.za	National – Swine Advisor
Johan du Plessis	072 806 7266	johandup@lionelsvet.co.za	Northern Cape
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Warnich Biersteker	082 414 7293	warnich@lionelsvet.co.za	Poultry Advisor
Werner van Rooyen	083 462 0474	wvrvrs@mweb.co.za	Southern Cape

Meet the Team!



1ste ry (vlnr): Riaan Momberg; Juan Welman; Shaun Bovey; Janique Fourie; Johan Botes; Jannic Zietsman

2de ry (vlnr): Byron Ott; Deon de Jager; Herman Bezuidenhout; Werner van Rooyen; Jan Joubert

3de ry (vlnr): JD Marais; Johan du Plessis; Gavin Dargie; GJ du Preez

4de ry (vlnr): Andreas du Toit; CC Terblanche; Derick Coetzee; Warnich Biersteker

LIONEL'S

VETERINARY SUPPLIES

DenVet

Solving your animal health problems

More than just products